



# Ecological Revitalization Webinar Case Study

Calumet Container:

Ecological Revitalization and Reuse at a  
Time-Critical Removal Action Site

Tom Bloom, EPA Region 5

# Site Introduction & Presentation Overview



- ✦ Getting Started: Integrating Remedy & Reuse, Enabling Ecological Revitalization
- ✦ The Removal Action: Key Moments and Components
- ✦ Project Outcomes & Lessons Learned



# Site Introduction





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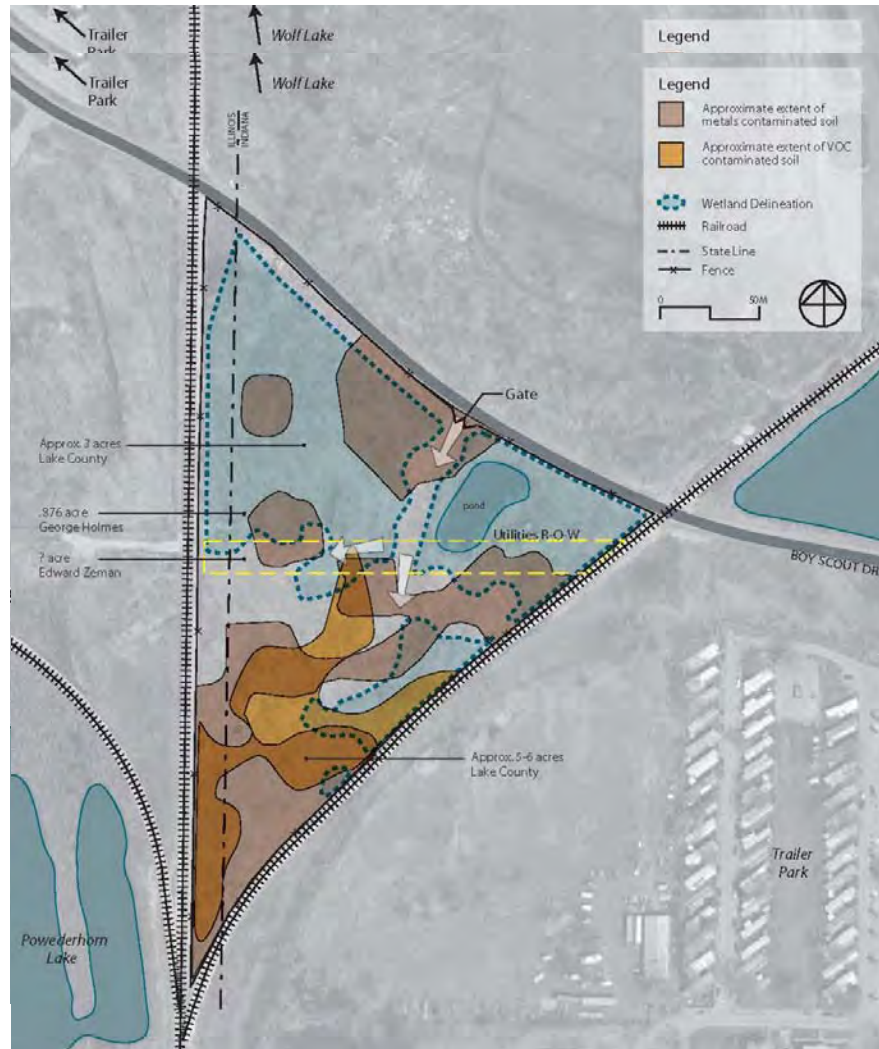




# Site Surroundings



# Getting Started: Site Characterization



- ★ Extent of contamination
- ★ Delineated wetlands
- ★ Site features
- ★ Ownership





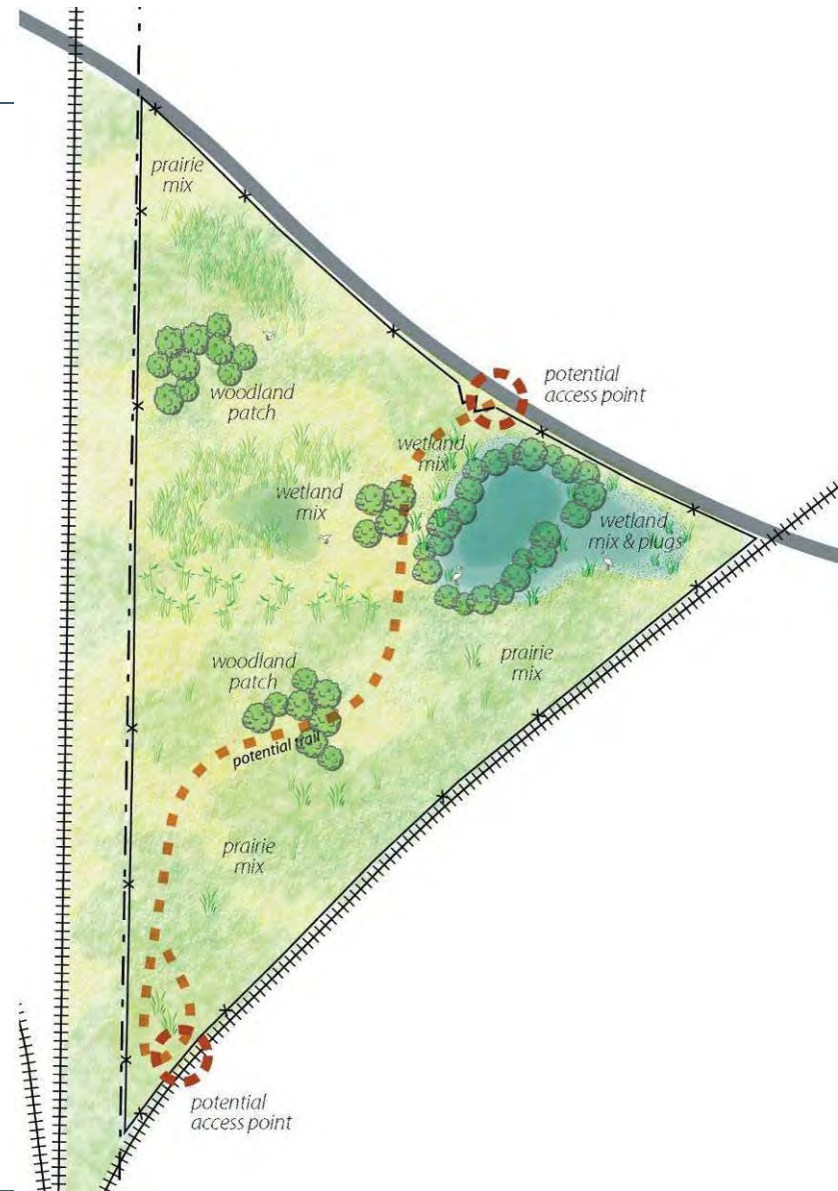
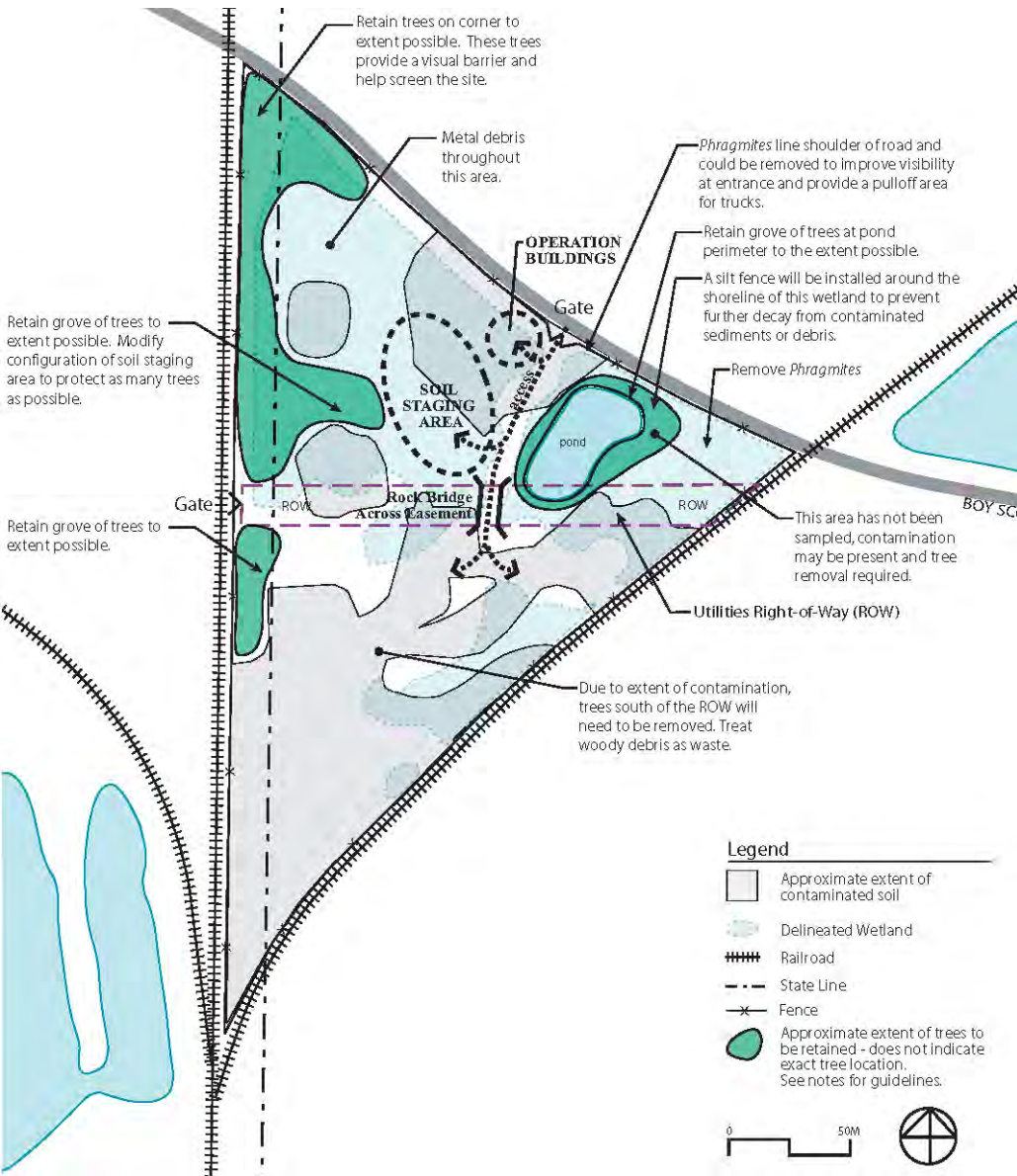
# Getting Started: Stakeholder Engagement



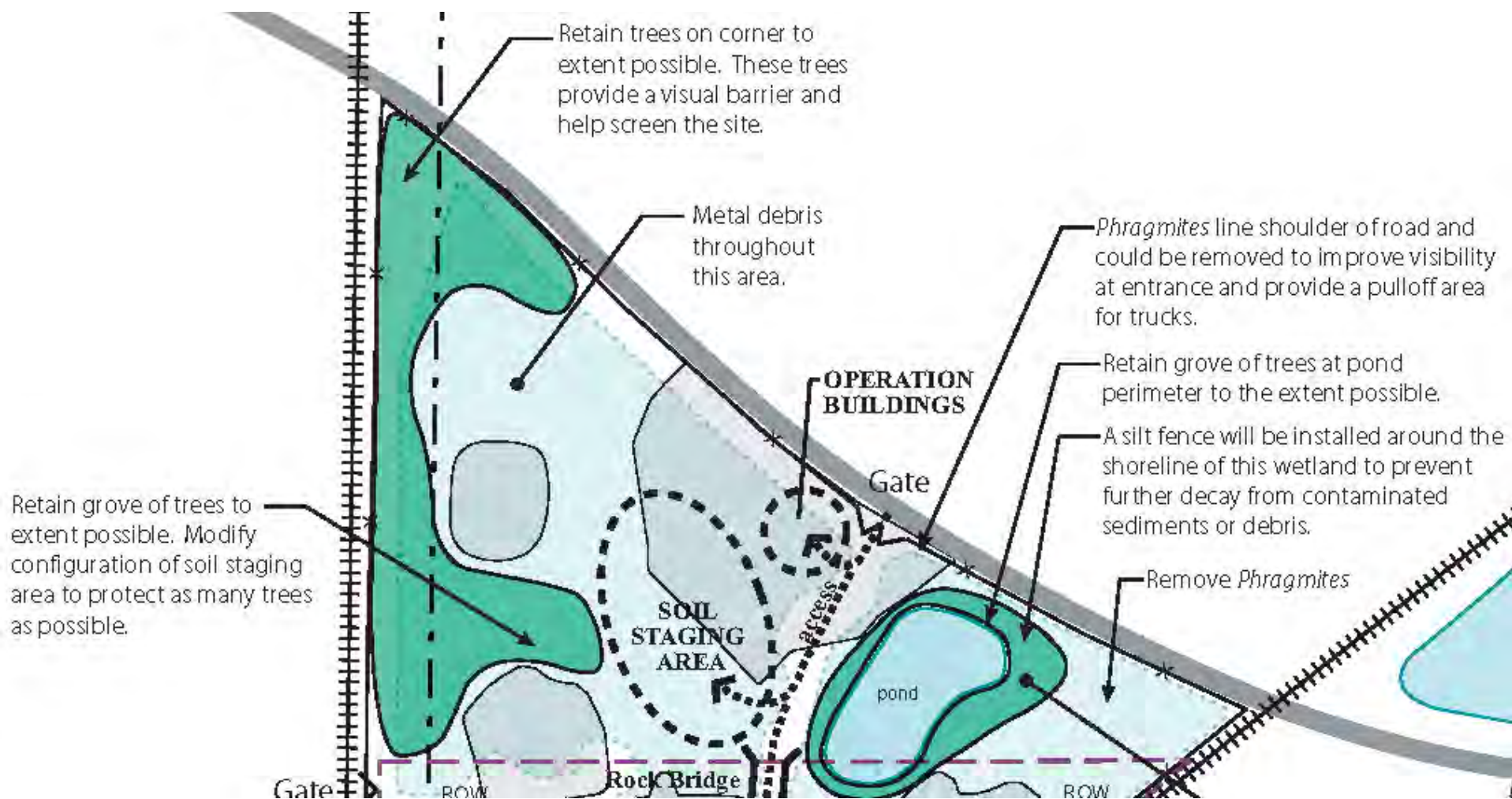
- ✦ Stakeholder interviews identified community's interest in recreational uses
- ✦ Targeted research identified local and regional green spaces and trail network initiatives
- ✦ Site identified as key node in open space and habitat network



# Informing the Removal Action: Integrated Mapping

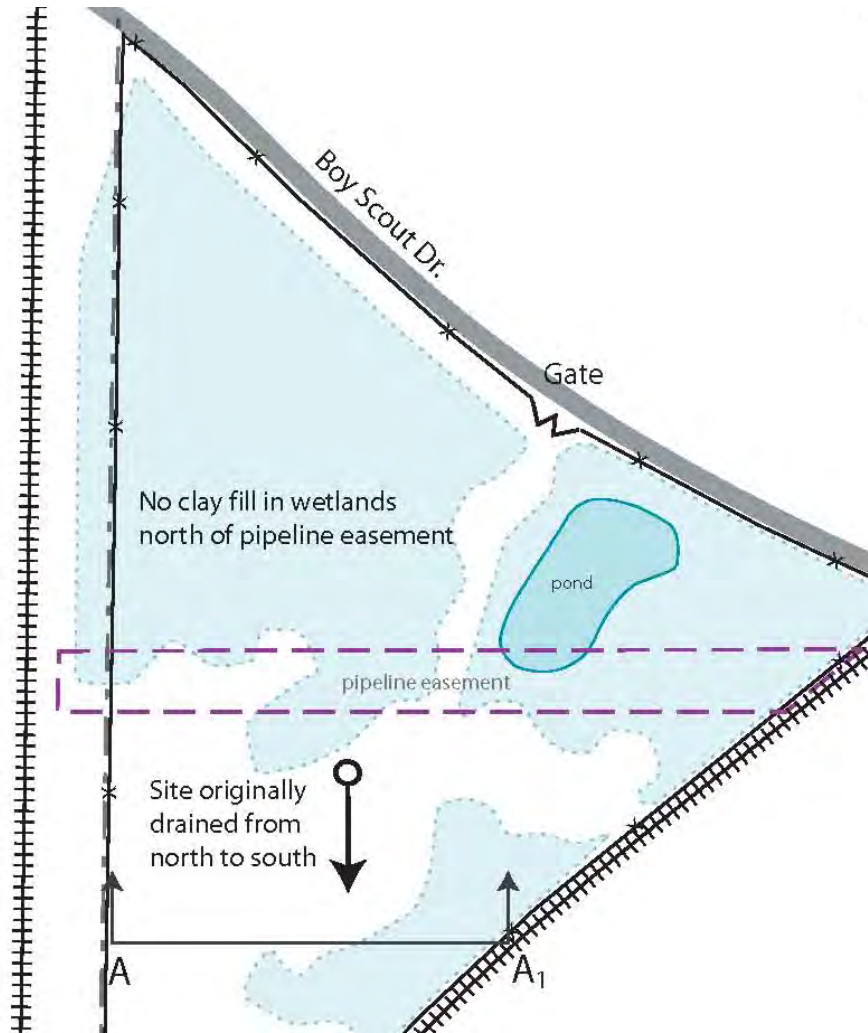


# Informing the Removal Action: Recommendations

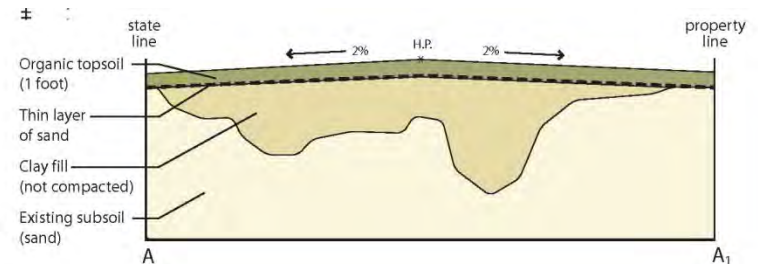
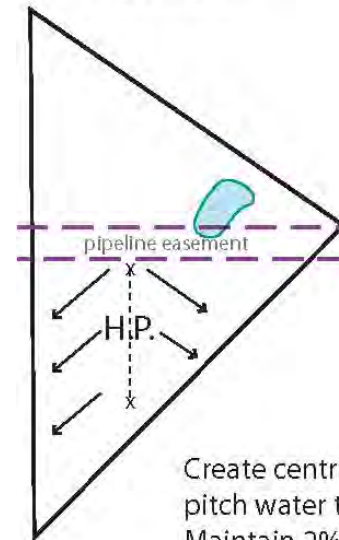




# Informing the Removal Action: Recommendations



Grading Diagram



# Removal Action: Fall 2005 – Spring 2006





# Site Planting & Maintenance Plans: February 2006

For installation services, please call (574) 586-2412

A general prairie grass and wildflower mix providing a solid variety of species at an affordable price, this mix features a nice palette of colorful species that should start blooming fairly soon after establishment. Adding seed or plant plugs at a later date is a wonderful way to increase species richness and diversity. This seed mix will include at least 5 of 6 native permanent grass species and 16 of 19 native forb species. Seeding instructions begin on page 50.

Botanical Name	Common Name	Oz./Acre
<b>Perennial Grasses</b>		
<i>Andropogon grandis</i>	Big Blue Stem	11.00
<i>Andropogon scoparius</i>	Little Blue Stem	22.00
<i>Bouteloua curtipendula</i>	Pale-Set-Grass	14.00
<i>Cynchrus cristatus</i> /winter mix	Stink-Sedge Mix	1.00
<i>Elymus canadensis</i>	Canada Wild-Rye	22.00
<i>Panicum virgatum</i>	Switch-Grass	2.50
<i>Sorghastrum nutans</i>	Indigo-Grass	28.00
		182.50
<b>Temporary Cover</b>		
<i>Asteriscus</i>	Seed Oats	340.00
<i>Solum multiflorum</i>	Annual Rye	20.00
<i>Poa annua</i>	Timothy	20.00
		480.00

Ferts		
<i>Aquilegia scopulorum</i>	Wild Columbine	0.50
<i>Asclepias tuberosa</i>	Butterfly Weed	1.50
<i>Antennaria angustifolia</i>	New England Aster	1.50
<i>Artemisia biennis</i>	Partridge Pea	2.75
<i>Ceanothus virginicus</i>	Indigo Bunting	1.50
<i>Conoclinium illecebre</i>	Humulic Sensitive Plant	1.50
<i>Echinacea purpurea</i>	Dead-Leafed Purple Coneflower	3.00
<i>Eryngium yuccifolium</i>	Rattlesnake Master	1.00
<i>Helopsis helianthoides</i>	Fish Sunflower	0.25
<i>Lespedeza bicolor</i>	Round-Headed Beech Clover	1.00
<i>Liatris spicata</i>	Knip-Flower	2.00
<i>Mimulus lewisii</i>	Wild Bergamot	0.75
<i>Monarda mollis purpurea</i>	Purple-Flower Cone	1.00
<i>Nasturtium officinale</i>	Peppercorn	0.75
<i>Penstemon virginicus</i>	Virginia Mountain Mint	0.75
<i>Rudbeckia hirta</i>	Yellow Coneflower	2.50
<i>Rudbeckia hirta</i>	Black-Eyed Susan	2.00
<i>Silene meibomia</i>	Pinkish Dock	0.75
<i>Solidago canadensis</i>	Early Goldenrod	1.00
<i>Thalictrum flavum</i>	Wary Tall Fennelseed	2.75
<b>Annual/Perennial Ferts Mix</b>		<b>48.00</b>

Mix Statistics				
Rawlins Component	PLS lbs./Acres	PLS Seeds/Acre	PLS Seeds/Sq. Ft.	% of Rawlins Mix
Forbes	3.33	1,794,000	25.72	63.23%
Groves	4.41	735,200	17.28	36.77%
Total Rawlins	7.75	2,067,400	47.00	100.00%
Non-Rawlins Forbs	1.92	1,040,400	32.32	
Grass	34.00	1,314,000	33.51	
Total	41.14	3,104,000	73.84	

Sold in 1/4 Acre Increments		
1/4 Acre Acres	PLS Acres	PLS Acres
\$725.00	\$650.00	\$125.00
		\$200.00

## SEDGE MEADOW SEED MIX

For installation services, please call (574) 586-2412

A grass, sedge and wildflower mix for level sites with year round saturated soil conditions. This mix creates a diversified habitat, offering a variety of cover and food options for wildlife. Many of the plants attract butterflies, and a few of them attract hummingbirds. This seed mix will include at least 11 of 14 native permanent grass and sedge species and 27 of 30 native forb species. Seeding instructions begin on page 50.



*Vernonia fasciculata*

Botanical Name	Common Name	Oz./Acres
<b>Perennial Grasses/Sedges</b>		
<i>Calamagrostis canadensis</i>	Blue Joint Grass	3.00
<i>Deschampsia flexuosa</i>	Heathy Sedge	2.00
<i>Carolinensis</i>	Northernmost Sedge	4.00
<i>Carex lasiocarpa</i>	Heathy Cat-tail Sedge	3.00
<i>Carex canadensis</i>	Heathy Fox Sedge	2.00
<i>Eleocharis acicularis</i>	Virginia Wild Sedge	1.00
<i>Eleocharis obtusa</i>	Tufted Nuttall's Sedge	1.00
<i>Eleocharis ovata</i>	Common Nutt.	0.50
<i>Lychnis viscaria</i>	Wax-Cat Grass	2.00
<i>Lychnis virginica</i>	Purple Swath Grass	0.50
<i>Scirpus americanus</i>	Dark Green Rush	0.50
<i>Scirpus americanus</i>	Red Bulrush	0.50
<i>Scirpus americanus</i>	Chamomile Rush	0.50
<i>Scirpus validus</i>	Coast Bulrush	4.00
<i>Scirpus americanus</i>	Purple Cat Grass	0.50
		<b>68.00</b>
<b>Herbaceous Crown</b>		
<i>Agrostis alba</i>	Indigo	3.00
<i>Alnus incana</i>	Seed Oaks	300.00
<i>Alnus incana</i>	Hamlet	20.00
		<b>384.00</b>
<b>Others</b>		
<i>Alnus incana</i>	Water Plantain, var. incana	1.50
<i>Agrostis alba</i>	Great Agrostis	2.50
<i>Agrostis alba</i>	Swamp Yellow	1.50
<i>Agrostis alba</i>	New England Aster	1.00
<i>Agrostis alba</i>	Swamp Aster	1.00
<i>Agrostis alba</i>	Pink Cat-tail	1.00
<i>Agrostis alba</i>	Flat-top Aster	1.00
<i>Agrostis alba</i>	Hooded Swamp Aster	1.00
<i>Agrostis alba</i>	Wild Corn	2.00
<i>Agrostis alba</i>	Wild Corn	1.00
<i>Agrostis alba</i>	Spotted Fox Paw Weed	1.00
<i>Agrostis alba</i>	Common Broomrape	0.50
<i>Agrostis alba</i>	Queen of the Patches	0.50
<i>Agrostis alba</i>	Butter Grass	0.50
<i>Agrostis alba</i>	Seaweed	0.50
<i>Agrostis alba</i>	Blue Joint Grass	3.00
<i>Agrostis alba</i>	Black Razzing Star	6.00
<i>Agrostis alba</i>	Cat-tail Grass	0.50
<i>Agrostis alba</i>	Coat Labels	0.50
<i>Agrostis alba</i>	Seeds	0.50
<i>Agrostis alba</i>	Water Scumweed	0.50
<i>Agrostis alba</i>	Virginia Mountain Mint	0.50
<i>Agrostis alba</i>	Reed-Like Aster	1.00
<i>Agrostis alba</i>	Cup Plant	1.00
<i>Agrostis alba</i>	Brown Goldenrod	1.00
<i>Agrostis alba</i>	Common Red	1.00
<i>Agrostis alba</i>	Mountain / Slope Rush	0.25
<i>Agrostis alba</i>	Blue Vines	0.25
<i>Agrostis alba</i>	Common Broomrape	0.50
<i>Agrostis alba</i>	Golden Aster	1.00
		<b>86.25</b>

Mix Statistics				
Native Component	PLS Btcs/Acre	PLS Seeds/Acre	PLS Seeds/Sq. Ft.	% of Native Mix
Forbs	2.89	3,064,913	70.36	43.34%
Grasses	3.75	4,000,032	91.99	56.66%
Total Natives	6.64	7,074,945	162.35	100.00%
Non-Native Forbs				
Cover	24.00	6,957,500	159.72	
Totals	30.64	14,032,445	322.07	

Sold In 1/4 Acre Increments		
1 or More Acres	1/2 Acre	1/4 Acre
\$1,250.00	\$250.00	\$125.00

## WET-TO-MESIC PRAIRIE SEED MIX

For installation services, please call (574) 586-2412

This mix offers a broad-spectrum prairie grass and wildflower mix for sites with medium to wet soils. Like the previous mix, this mix offers a more varied height profile. This dynamic grouping of plants features a variety of colors and textures while tolerating a wide range of conditions. This seed mix will include at least 5 of 6 native permanent grass species and 25 of 31 native forb species. Seeding instructions begin on page 50.



Botanical Name	Common Name	Oz./Acre
<b>Perennial Grasses</b>		
<i>Andropogon gerardii</i>	Big Blue Stem	65.25
<i>Cynodon dactylon</i>	Wear Vio Green	4.50
<i>Cortaderia</i>	Brady Canary Sedge	1.00
<i>Elymus canadensis</i>	Canada Wild Rye	16.00
<i>Pennisetum virginicum</i>	Switch Grass	1.50
<i>Setaria viridis</i>	Red Bristle	8.75
<i>Sorghastrum nutans</i>	Indian Grass	6.00
<i>Sporobolus holcus</i>	Pasture Cord Grass	100.00
<b>Annuals &amp; Combs</b>		
<i>Amaranthus retrofractus</i>	Redtop	4.00
<i>Amaranthus</i>	Seed Oats	30.00
<i>Setaria faberii</i>	Annual Rye	300.00
<i>Pennisetum</i>	Timothy	26.00

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Mix Statistics				
Native Component	PLS lbs./acre	PLS Seeds/acre	PLS Seeds/Sq. Ft.	% of Native Mix
Grasses	4.81	3,174,175	72.96	73.69%
Forbs	6.25	1,134,100	26.13	26.37%
Total Natives	11.09	4,310,275	99.09	100.00%
Non-Native Forbs	0.94	938,596	21.25	
Cover	30.50	4,376,250	102.29	
Totals	42.38	13,691,121	312.93	

Sold in 1/4 Acre Increments		
1 or More Acres	1/2 Acre	1/4 Acre
\$1,425.00	\$455.00	\$450.00

*Petalostemum purpureum*

# Ecological Revitalization: Spring 2006

## **PARTNERS IN REMEDIATING AND RESTORING THE FORMER CALUMET CONTAINERS SITE**

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Hammond, Indiana

April 21, 2006

**United States  
Environmental Protection Agency**

City of Hammond, Indiana

**Indiana Department  
of Environmental Management**

Lake County, Indiana



# Ecological Revitalization: Summer 2006 - 2009



# Ecological Revitalization Lessons Learned

1. Ecological revitalization and time-critical removal actions can be compatible
2. Straightforward options: revegetate with native plants to restore site ecology
3. Think locally and regionally
4. Short-term costs can provide long-term cost savings
5. No need to go it alone!
6. Looking long-term: site maintenance plan and post-closure care planning





# Additional Lessons Learned

Considering future use at the site helped:

- ★ Clarify site ownership
- ★ Identify community's interest in future use of site
- ★ Integrate future use considerations into cleanup
- ★ Raise community awareness
- ★ Help address site stigma issues
- ★ Address long term protectiveness
- ★ Establish site maintenance plan and responsibilities for post closure care



# For more information

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